Curlin 6000 IOD In-Service Outline

I. Introduction
   A. Introduce yourself
   B. Discuss Moog
   C. Inform why you are there, e.g. New purchase, addition of library
   D. Introduce type of device, administration routes and all five modes

II. Overview
   A. Pump – small robust, weighs approximately 18 oz.
   B. Ambulatory – delivers 5 Therapy Modes (Continuous, Intermittent, PCA, TPN, and Variable)
   C. Can be used to deliver all bag sizes

III. Features of Outside of Pump and Accessories
   A. Locate LCD Screen.
      1. Tallman Lettering
      2. Words spelled out
   B. Review key functions.
      1. Discuss function of each but mention that IOD keys will be detailed later in the in-service.
         a. IOD keys NO. 1-4 are available on all modes
         b. IOD keys NO. 5-0 function in the PCA mode only
   C. Locate AC adaptor port
      1. Discuss AC adaptor and proper placement.
      2. Mention the color coding: blue sleeve to blue port and is not interchangeable with the bolus cord.
      3. Discuss two pronged design- can only insert one way.
      4. Emphasize not to tug on cord since pulling can break the internal wires (Same with Bolus Cord).
      5. Pull back on the sleeve to remove the cord (Same with Bolus Cord).
      6. If in a lockbox, the cord is locked inside. The same applies to the bolus cord.
   D. Locate Bolus /Data Port.
      1. Discuss Bolus cord and proper placement.
      2. Mention the color coding: green sleeve to green port and is not interchangeable with the AC power adapter.
      3. Discuss two pronged design –can only be inserted one way
      4. Discuss how to test bolus cord in PCA mode.
   E. Discuss Back of Pump.

1. Locate Clinical Hotline Number.
2. Locate serial number
3. Locate and explain the Access Code
    a. Remind them it is reserved.
    b. Emphasize they should never let the patient know the code or where to locate it on the pump.
    c. All 6000 pumps have a 9 digit code (customized exceptions to this, could be 5 digit – know this prior to in-service)

F. Locate Battery Compartment (Changing Batteries)
1. Pump operates on two C-Cell batteries when not plugged into AC. Moog recommends Duracell ProCell batteries
2. Demonstrate installation of batteries
3. Ensure that the pull tab is between the batteries (on battery compartments that have pull tabs). If the pull tab is under the batteries, the door will not close properly and may not have good battery contact on the coils.
    a. Demonstrate open/close position of door slide.
    b. When lockboxes are in use, demonstrate how changing the batteries can be done from the back of the box without opening it.
    c. Demonstrate proper removal of batteries.
    e. Positive poles of both batteries are to be at the top.
    f. Emphasize placing the batteries in the bottom side first. Verify that springs come in contact with metal on bottom of the batteries (the flat side of battery).
    g. Confirm door slide is in the closed/locked position.
    h. Mention appropriate longevity of battery life as tested with the Duracell ProCell batteries:
        Nominal 85 hours at 2mL/hr
        Nominal 30 hours at 125mL/hr
        Nominal 10 hours at 400mL

G. If applicable discuss lock box and/or pump holster and/or carrying pouches
1. Discuss size of lockbox (small or large), and sizes of bags it can accommodate.
2. Mention color of lockbox, if applicable.
3. Discuss the key to lockbox and IV pole.
    a. The only time the key is needed (other than set up and discontinue) is when hanging new bag or bottle.
    b. Mention where the key is located according to their policy.
    c. Demonstrate how to insert IV bag with even distribution of weight while keeping tubing free from kinking. It is important to downplay when demonstrating kinking tubing inside the lock box.

d. Discuss that the lockbox can be locked to IV pole if necessary using the same key.
e. Locate compartment that holds extra C cell batteries.

IV. Administration Sets

A. Discuss features of the administration sets they will be using, e.g. TPN with filter, ASV, Y-sites.

B. Discuss the package of the administration set.

1. Locate Reference or Product No. (REF No.), lot no., expiration date, priming volume, and DFU.

C. Upon removal from package verify that spike has cover intact, end cap is intact, flow stop tab is intact and slide clamp is open.

D. Locate the tubing guide, yellow integral flow stop and slide clamp.

1. Discuss filter, if applicable.
2. Discuss back check valve included with sets having a "V" after the product no.

E. Discuss that manual priming can only be done prior to attaching back check valve.

F. Note that blue end cap is vented. Therefore, set can be primed while the end cap is in place to prevent contamination.

G. Discuss and locate ASV (anti siphon valve), if applicable.

1. Device acts as additional free flow protection.
2. Must be primed on the pump due to increased pressure requirements needed to flow through the valve.

H. Demonstrate manual priming (if non ASV administration set).

1. Close slide clamp first.
2. Remove tab from integral flow stop.
3. Connect to IV container.
4. Open slide clamp.
5. Squeeze integral flow stop to prime.
6. Filters, when present, must be primed vertically and the filter membrane must be completely wetted.
   a. Expect air moving in and out of flat side of filter to equalize pressure.
   b. Do not cover the filter vent located on the top of the ribbed side of the filter.

V. Loading the Set

A. Locate blue and yellow arrows on back plate of pump.

B. Insert blue tubing guide into receptacle indicated by blue arrow.

C. Centralize the soft segment of tubing over the pumping fingers to prevent false downstream occlusion alarms.
D. Insert yellow integral flow stop into receptacle indicated by yellow arrow (the tubing should slide between the 2 black posts in front of the receptacle-this is the air sensor.)
E. Verify placement of tubing in notch of door/latch to avoid kinking when door is closed.
F. Close door and verify latch is flush with the top of the pump.
G. Discuss sticker which says to remove pump from service if dropped. This should be done even if the pump powers up and appears not to be damaged. Send the pump to the Biomed department to be checked.

VI. Manual Programming (If using PLSS Library – Skip this section and continue with Section VII)

A. This is a YES/NO pump.
    1. To navigate the screen, use the arrow keys to get to the field, but only for navigation and not when programming.
    2. If something is highlighted or flashing during programming, the pump is asking you what you want. Answer by selecting YES or NO.
    3. Emphasize that selecting YES to an entry while programming allows the user to advance to the next field. Using the arrow keys will result in an alert reading "Field Not Accepted." The pump requires confirmation on data that can change patient outcomes.
B. Discuss lock levels.
    1. Explain the variances in lock levels
    2. Be aware of their preferred lock level prior to the in-service. (LL2 is the norm)
C. Choose Program when manually programming. (Defaults to Program when there is not a library uploaded into the pump.)
D. Select New Program and enter access code, if required.
E. Reemphasize selecting YES to confirm every entry to advance from field to field. Use the NO key to erase or make a change in the field.
F. Hints: When demonstrating use in the various modes, use examples to fit their scenario. (Example: 12 hr cyclic TPN with a 2000 mL bag). Have them set air sensor to OFF just for demo if using loop sets instead of sets and fluids.
G. Discuss the 5 modes of therapy and possible therapies of each, programming each.
    1. Continuous – Allows for a constant, programmed rate of infusion, e.g. hydration, electrolyte imbalance, chemotherapy, IVIG, etc.
        a. Max infusion rate is 400mL/hr.
        b. Delayed start options discuss only that delay can only be set for minimum of 1 minute and no more than 24 hours

c. Frequency of alarms is determined by KVO settings.
    1) When KVO rate is set, pump will alarm at end of infusion and every twenty minutes.
    2) It is imperative to set the KVO rate to zero (or the same as the infusion rate) when infusing medications that should not have an interruption in in therapy. When KVO is set to zero, pump will alarm at end of infusion and every few seconds.
d. May change the rate without pausing the pump when a MedLimit is set.

2. PCA – Patient Controlled Analgesia (increase in drug concentration allows for increase in dosage received.)
    a. IV PCA-Three administration routes. An increase in concentration allows for an increase in dose.
        1) FYI-bolus dose infuses at 125mL/hr.
        2) Max basal rate is is 9.9mL/hr.
        3) Max bolus dose is 9.9mL
    b. Epidural PCA
        1) FYI- bolus dose infuses at 90mL/hr.
        2) Max basal rate is 25mL/hr.
        3) Max bolus dose is 25 mL.
    c. Subcutaneous PCA
        1) FYI- bolus dose infuses at 60mL/hr.
        2) Max basal rate is 5mL/hr.
        3) Max bolus dose is 5 mL.
    d. MEDLIMITS can be configured if desired or required.
        1) Indicates Delta Rate/Time.
        2) Delta is the amount of changes in rate and/or time allowed. Can be left at zero and still set other parameters.
    e. Demonstrate giving a patient bolus using the bolus cord.
        1) Explain they will hear 2 beeps when dose is requested and to be given, but only one beep when requested and denied.
        2) Hint: Use Small Amounts (ex: 0.2 mL or mg/mcg equivalent)
    f. Define and discuss Clinician Dose (See Options menu for details.) Always do Clinician Dose after Patient Bolus, and demo how it locks the patient out for the bolus interval

3. TPN –Total Parenteral Nutrition
    a. Max rate is 400mL/hr.
    b. Steady linear titration to desired rate.
    c. Cyclic- UP and Down Ramping.
    d. Early Down Ramp feature available.

4. Intermittent- Delivers specific amounts at programmed intervals and rate with KVO option between doses.
    a. Impress importance of changing medication prior to selecting Repeat Rx or dose will be dropped.
    b. Resume therapy within 30 minutes to maintain delivery schedule.
    c. Next Dose in Options Menu allows time of next dose to be changed.
5. Variable-Delivers multiple (up to 24) variable doses in 24 hours.
    a. Typically used for IVIG or medications that requires a loading dose such as Primacor or step dosing such with Dobutamine in cardiac stress testing.
    b. Pump can auto-calculate field when two of three fields are entered. i.e. rate, amount to be infused, and time.

H. Once pump is programmed, select NO to Review and confirm settings.
I. Prime the set on the pump.
J. Press Run to Start.

VII. Library Enabled Pumps (If not using PLSS library, skip this section)

A. Select Library.
    1. Obtain a copy of the facility's library prior to in-service.
    2. Defaults to Library when a library is uploaded to the pump.
B. Describe Categories.
    1. CAT will be listed down the vertical bar if present.
    2. If this is an evaluation, discuss that the categories are user defined and can be renamed as customer wishes. Examples may be by infusion types, care areas, etc.
    3. The software can accommodate up to 15 categories.
C. Select the appropriate category.
D. Select drug protocol. This is the DRG screen.
    1. DRG is listed down the vertical bar.
    2. These are the drugs that are within a specific category. If this is an evaluation, mention that the software can accommodate approximately 100 protocols.
E. Discuss Advisories and acknowledgement.
    1. Advisories are attached to drugs optionally (in the software). Mention advisories, only if applicable. This information should be ascertained prior to training.
    2. Advisories must be accepted by pressing YES to advance to the next screen.
    3. If the advisory is rejected (by pressing NO), it takes the user back to the beginning.
F. Verify Program
    1. Describe and demonstrate how high doses are protected.

a. Demonstrate how a high dose placed cannot be overridden.

2. Discuss soft limits, if applicable. There may not be any used since Soft limits are optional in the PLSS software.
   a. Know whether and where soft limits are set in the facility's protocols prior to training.
   b. Demonstrate that soft limit overrides must be validated by pressing the YES key. This information must be validated prior to training.
   c. A copy of the drug library will tell which drugs have soft limits.
   d. Discuss the difference between soft and hard limits.

G. Review the Program prior to priming.

H. Demonstrate priming on the pump.

I. Select Run to Start.

J. Toggling Run Screen (see Section VIII).

VIII. Toggling Run Screen

A. Discuss information toggling on the screen.
   1. Give a brief overview of information toggling on screen. Emphasize that this info relates ONLY to the bag that is hanging – the current infusion just like a large volume pump. This information is NOT shift totals. Volumes will re-set when you hang a new bag and select Repeat RX.
   2. Line Pressures in mmHg.
      a. Explain that the Curlin pump is one of the only, if not the only pump that gives real time line pressures. Discuss how it relates to recognizing impending down occlusion pressures, e.g. 8 psi or 400 mmHg for low setting, 18 psi or 900mmHg for high setting.
      b. Emphasize that mmHg measures resistance as opposed to force. If they need a lesson in line pressures, arrange it after class i.e. what affects line pressure: catheter gauge size, height of pump, blood pressure, kinks, clamp, infusion rate, etc.
   3. Volume /Dose infused
   4. Volume remaining
   5. Boluses given/Boluses attempted (PCA mode only).
      a. Demonstrate giving a patient bolus with a small dose and show information toggling on screen.

IX. Discuss Resume, Repeat and New Program

A. Pause the pump.
   1. Emphasize that Repeat RX must be selected with each new bag hung.
   2. Explain that Repeat Rx resets bag volume.

3. If Resume is accidently pressed, the pump will soon alarm “Infusion Complete” and therefore must pause the pump and select Repeat Rx.

B. Emphasize not to touch keys while it is scrolling through the screens. If they do they will have to manually press YES throughout the remaining fields. They can, however, stop the screen from scrolling if they wish to review each field at their own pace.

C. The terms Resume and Repeat Rx refer to the IV bag. I.e. Are you going to resume the SAME bag or Repeat the Rx with a new bag?

X. Changing an existing program. This refers to changing a bag volume, rates and time in the prescription menu.

A. Change parameters through Resume because you will be resuming the same bag. Press YES /Enter to Resume.

B. While in the Run to Start screen, press NO to Review.

C. Scroll through the program by pressing the YES key to each field. Demonstrate how to change a dose or volume and continue to press YES until Done.

D. Mention that the pre-prescription screen, i.e., units, concentration, admin route, and (loading dose in the PCA mode) may not be changed once programmed.

E. Emphasize that original bag volume will be automatically reset.

F. Volume infused will be erased, but not the shift totals.

XI. Hanging a new bag

A. Select Repeat Rx.

B. Review scrolling screen (do not press any keys or scrolling will stop).

C. Press No to Review if additional review is necessary.

D. Prime after reviewing so to maintain original bag volume.

1. This is done only with a new admin set.
2. No need to prime when changing a bag but not tubing.

E. Emphasize that original bag volume will be automatically reset.

F. Volume infused will be erased, but not the shift totals.

XII. IOD Keys

A. Discuss each IOD Key function appropriate to therapy.

1. Verify whether pump has IOD keys prior to training. Pumps may not have been purchased with IOD keys.
2. May not be necessary to discuss EVERY key. They can read this on their own if their time is limited. Makes the pump appear difficult.
3. In modes other than PCA only Keys 1-4 are functional.

B. Discuss mainly the #6, #7 and #9 keys as they are the most important keys when in PCA mode and should be checked at the beginning of EVERY shift to:

1. Verify the pump is programmed correctly – (#6 and #7)
2. Confirm that the previous shift CLEARED the shift totals (before too much time elapses). If the previous shift did NOT clear the totals, make note of the totals and clear.—(#9)
3. The #9 key should be viewed again at the end of EVERY shift and CLEARED.
    a. Inform user that the word "CLEAR" must be present and YES must be pressed in order to clear totals. Validate that the totals were cleared by pressing #9 one last time.
    b. Totals will be maintained until nurse clears the totals
    c. Instruct that though shift totals will be maintained, the information that continues to toggle on the run screen will refer to the current bag hanging. Also, reiterate that when hanging a new bag all totals reset but it does not clear shift totals. THIS IS IMPORTANT and will eliminate problems later!!
4. Discuss the #5 key: Hourly Totals
    a. A good way to gauge patient's pain.
    b. BG is Boluses Given. BA is Boluses Attempted
        1) This is the # of boluses given and requested during each hour along with the amount of drug received each hour.
        2) The total amount infused includes the loading dose, if any, basal, and clinician doses if any.
    c. Can toggle up to view up to 24 hour totals (hour by hour).
    d. Totals will be maintained from the past 24 hours and will not clear until a new therapy is programmed.
    e. Explain that shift totals and hourly totals can be viewed and cleared through the options menu also.

XIII. Options Menu: (This should be the last thing to cover due to time constraints).

A. Discuss Lock Levels – Usually never off in hospital environment.
B. Review and discuss each field briefly.
C. Demonstrate how to change audio, air sensor, down occlusion, view power charge. Explain that air sensor and down occlusion has defaults when starting a new program if the parameters have been changed.
D. Describe differences in fields specific to mode as they apply to the user.
    1. Continuous
        a. MedLimits field present only when MedLimits set.
        b. Enables user to titrate rate when pump is infusing.
        c. Emphasize the selection of Repeat Rx will restore the infusion rate to the original rate set at the initiation of the infusion.
    2. PCA
        a. Clinician Dose

1) A clinician dose is an extra dose given through the pump.
2) It is Best Practice to give extra doses through the pump to avoid opening the system as with an IV push.
3) Clinician Dose restarts the lockout period. Therefore, a patient bolus should be given before the clinician dose is given (otherwise it is not extra medication).
4) Clinician Dose counts toward the total infused in the hourly totals (#5) and shift totals (#9).
5) Restart infusion and demonstrate how to administer a Clinician Dose. Use small amounts e.g. 0.1 or 0.2 mL. Need access code, program it, and validate by pressing YES to 3 questions.
6) Discuss how to stop a Clinician Dose before complete if necessary. It is best to discuss this rather than demonstrate.
    a) Pause pump and select YES to Resume and then press Options.
    b) Access Clinician Dose and reset dose to "zero."
    c) Accept change and Options.
    d) Restart infusion. Clinician dose will stop.

b. Shift Totals
1) Inform users that there is an easier method to access shift totals and hourly totals by accessing the IOD keys when in PCA mode.
2) Remind user without IOD keys that NO must be selected to DONE? EXIT in order to change to DONE? CLEAR. May then press YES to clear totals, then YES to DONE? EXIT,

3. TPN-
    a. Discuss Early Down Ramp
4. Intermittent
    b. Discuss Next Dose Option

XIV. Troubleshooting Tips.

A. Alarms and Alerts- No need to demonstrate all the alarms.
1. Review the basic alarms, air in line, up and downstream occlusion, high up pressure, door open, infusion complete, low battery, empty battery, replace set. Let them know that all the major alarms are present including an unattended alarm after 2 minutes if they forget to press Run, etc.
2. Note that the HELP text on alarms tells the user what to do (press Pause, Yes to Resume, then troubleshoot alarm, and restart the infusion)
3. Demonstrate Downstream Occlusion to show how the pump self corrects. Pinch the tubing downstream until alarms and release.
4. Demonstrate Door Open alarm to show how to pause pump, resolve issue, then press YES to Resume and Run to Start.

5. Discuss Replace Set 3 and 4
    a. Replace Set 3 typically indicates a need to change the set. It means that the pumping segment of the tubing has flattened
    b. Replace Set 4 is over or under pressurization of the set. Usually occurs when the infusion first starts. Examine placement of bag in lockbox and for clamps. Equalize pressure in set by disconnecting from patient, prime set or remove set and squeeze the integral flow stop. Replace the set reconnect to patient and restart the infusion. May have to change the set if cannot troubleshoot.

XV. For repair, return to Biomed or Provider.

A. Indicate Error Code or specific problem on paper and attach to pump for easy reference when sending to Biomed. (Do not write “pump broken.”)

B. Call Moog Clinical Support Line for additional troubleshooting measures.